U.S. Fish & Wildlife Service

ENDANGERED Species BULLETIN

November/December 1999 Vol. XXIV No. 6

The passage from one millennium to another is a natural time to take stock of the past while planning for the future. A quarter-century ago, Congress took the far-sighted step of creating the Endangered Species Act, widely regarded as the world's strongest and most effective wildlife conservation law. It set an ambitious goal: to reverse the alarming trend of human-caused extinctions that threatened the ecosystems we all share.

Like an animal adapting to a changing environment, the Act has evolved to allow new approaches for conservation. Amendments and administrative changes ensure a strong scientific basis for decisions on endangered species, facilitate large-scale planning to accommodate land use and wildlife habitat, and promote innovative public/private partnerships.

U.S. Fish & Wildlife Service

Corel Corp. photo

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On the Cover
Fish and Wildlife Service programs such as Endangered Species, Refuges, and Law Enforcement are working with conservation organizations and federal, state, and local agencies to protect the endangered Florida manatee.
Corel Corp. photo

The Endangered Species Bulletin welcomes manuscripts on a wide range of topics related to endangered species. We are particularly interested in news about recovery, habitat conservation plans, and cooperative ventures. Please contact the Editor before preparing a manuscript. We cannot guarantee publication.

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IN THIS ISSUE

Sharing the Rewards of Endangered Species Recovery

by Jamie Rappaport Clark

The peregrine falcon, which Director Clark worked with early in her career, is no longer in danger of extinction. The recovery of this magnificent bird made it posssible for the Fish and Wildlife Service to remove the peregrine from the endangered species list in 1999.
USFWS photo

The Endangered Species Act ranked as one of the most popular laws ever when it was enacted in 1973. It passed with almost unanimous support in Congress, following the ground-breaking research by the Fish and Wildlife Service that linked DDT, a commonly used pesticide, to the thinning of egg shells in a number of bird species.

One of these was the peregrine falcon. During the early days of the Endangered Species Act, I cared for five of these then-endangered falcons at Maryland's Aberdeen Proving Ground. As a young biology student, I felt fortunate to hold newborn chicks in my hands and to have grown peregrines perch on my forearm. I knew the species was on the verge of disappearing, but I was confident that America's support for the Endangered Species Act would ultimately save the world's fastest bird from extinction.

My faith in the public's resolve was strengthened by my first professional experiences. In the 1980's, as a biologist for the U.S. Army, I saw the care our Armed Forces took to conserve endangered species on our military bases worldwide. Then in 1985 there came some truly inspiring news; for the first time ever, an endangered species—the brown pelican—had recovered to the extent that it warranted delisting, albeit only in part of its range. Two years later, the American alligator became the first species on our continent to fully recover and be removed rangewide from the endangered species list.

It was in 1988, during this period of public support and celebration, that I joined the Fish and Wildlife Service. In that year, the endangered species program operated on a budget of about $30 million to care for the more than 500 U.S. species listed as threatened or endangered. I began as a staff biologist in Washington, D.C., and went on to become Chief for Endangered Species, first in the Albuquerque Regional Office and then back in Washington. Eventually I became the Assistant Director for Ecological Services and finally the Director. Over that time, I saw the endangered species program expand dramatically. Today, with nearly 1,200 U.S. species listed, the program receives appropriations of roughly $130 million.

To a large extent, this growth came in response to the increase in the number and the complexity of endangered species issues. These factors in turn transformed the Endangered Species Act for some people into a lightning rod for discontent about wildlife management. I witnessed the transformation myself when the spotted owl controversy hit the agency. I'll never forget Congressional hearings at

which lawmakers accused the Act of putting people out of work. Of course, it wasn't the Endangered Species Act that cost people their livelihood, but the perceived conflict between endangered species and jobs was sensationalized by many in the media.

What we have done since the spotted owl controversy is nothing short of amazing. Through Habitat Conservation Plans, the "No Surprises" Rule, Safe Harbor and Candidate Conservation Agreements, and many of our other conservation programs, we have fostered successful partnerships with groups that have not always seen eye to eye with us. In Texas, for instance, ranchers are inviting us onto their lands to release aplomado falcons. In South Carolina, private landowners are signing up to host red-cockaded woodpeckers on their property. And in fast-growing San Diego, a county-wide urban development plan is taking into account the needs of more than 80 threatened and endangered species, including the Riverside fairy shrimp, arroyo toad, and western snowy plover.

Industry is getting into the act as well. A utility company in Florida, for example, is looking out for endangered sea turtles by reducing artificial lighting that confuses hatchlings in beach nesting areas. In Texas, through a Safe Harbor Agreement, a petroleum company is restoring habitat for the Attwater's greater prairie-chicken, one of the rarest birds in the U.S.

From coast to coast, we now have examples of State and local governments, industry, and private individuals demonstrating that endangered species conservation is compatible with a strong economy. As we enter the new millennium, with anticipated population growth and increasing urban sprawl, these types of partnerships—involving government, industry, and individuals—will become increasingly crucial.

We cannot recover species on our National Wildlife Refuges and other Federal lands alone. For endangered species to survive in the future, fish and wildlife management must be practiced not only in America's public wild places but also in its family farms, industrial areas, community parks, and backyard garden plots. It is the Fish and Wildlife Service's challenge to encourage everyone to participate. I intend to continue to pursue the funding and develop the policies, programs, and tools to help us do just that.

Those of us who have worked with endangered species have shared the special feeling that comes from releasing Mexican gray wolves into the wild, rescuing the California condor from extinction, or holding a peregrine chick in our hands. It is a powerful emotion. It makes people proud to point to an endangered species and say, "That is an endangered creature and I'm on the team to rescue it from extinction." Most people do want to help. We need to make their involvement easier by providing sound science to guide their land uses and by listening to their point of view. With their support, we can all share the optimism I've had, from my work with peregrine chicks at Aberdeen to the day we recognized the recovery of this magnificent bird, that endangered species can be saved.

Jamie Rappaport Clark is Director of the U.S. Fish and Wildlife Service.

The southeastern brown pelican and American alligator were the first two animals to fully recover and be removed from the endangered species list. Many other animals and plants are on the road to recovery.
Corel Corp. photos

The Endangered Species Listing Program

by Joy Nicholopoulos

Tooth Cave ground beetle* (Rhadine persephone), *an endangered insect from Texas
USFWS photo by Wyman Meinzer

The Endangered Species Act of 1973 (ESA) gives the Secretary of the Interior responsibility for making a very important decision: determining whether to place an animal or plant on the Federal list of endangered and threatened species. This responsibility is delegated to the Director of the U.S. Fish and Wildlife Service (FWS). The Director has authority to approve all petition findings, listing proposals, and final listing determinations.

But how exactly does a species become listed under the ESA? The process is cumbersome, complex, and generally poorly understood. It can happen two different ways: through the petition process or through the candidate assessment process. The ESA provides that any interested person may petition the Secretary of the Interior to add a species to, or to remove a species from, the list of endangered and threatened species. Through the candidate assessment process, FWS biologists identify species as listing candidates. (See "The Candidate Conservation Program" in *Bulletin* Vol. XXIV No. 5.) Both processes may result in a species being proposed for Federal listing under the ESA.

The Basis for Listing

Under the ESA, the following factors determine whether or not a species should be listed as endangered or threatened:

- the present or threatened destruction, modification, or curtailment of the species' habitat or range;
- overutilization for commercial, recreational, scientific, or educational purposes;
- disease or predation;
- the inadequacy of existing regulatory mechanisms; and
- other natural or manmade factors affecting the species' continued existence.

The Listing Proposal

Procedures for listing vulnerable plants and animals under the ESA have become increasingly rigorous over the years. Currently, the process works this way: When we have enough scientific information (either through the petition process or the candidate assessment program) to indicate that listing is warranted, FWS biologists in the appropriate Field Office draft a proposed listing rule. (For foreign species, the proposed rule is drafted by the FWS Office of Scientific Authority in Washington, D.C.) The listing proposal provides background information on the species (taxonomy, historic and current range, population information, habitat requirements, etc.), a summary of the threats faced by the species, a determination and/or designation of critical habitat if appropriate, examples of available conservation measures, and a preview of actions that would be prohibited (as well as actions that would *not* be prohibited) if the species were to be listed.

Following a review in the appropriate FWS Regional Office, the draft proposal is sent to the Washington Office, where it undergoes further review by FWS and Interior Department personnel. After any necessary changes are made, the listing proposal goes to the Director for approval and signature. The listing proposal is then published in the *Federal Register*.

San Joaquin kit foxes **(Vulpes macrotis mutica)**
Photo by B. Moose Peterson/WRP

So what does it mean to be listed?

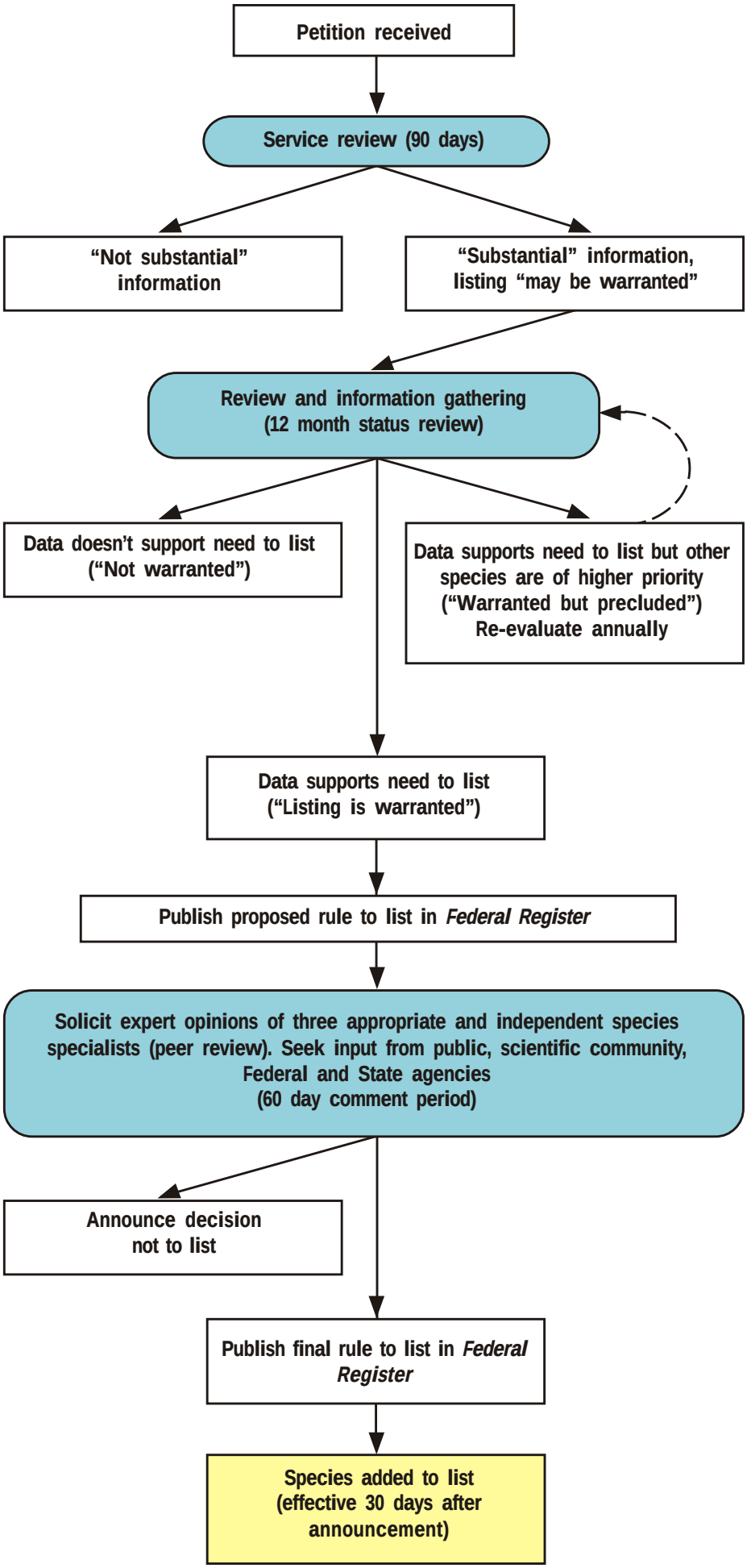
Among the conservation benefits authorized for threatened and endangered plants and animals under the ESA are: protection from being jeopardized by Federal activities; restrictions on take and trafficking; a requirement that the FWS develop and implement recovery plans for listed species under U.S. jurisdiction; authorization to seek land purchases or exchanges for important habitat; and Federal aid to State and Commonwealth conservation departments with cooperative endangered species agreements. Listing also lends greater recognition to a species' precarious status, encouraging conservation efforts by other agencies (foreign, Federal, State, and local), independent organizations, and concerned individuals.

Section 7 of the ESA directs Federal agencies to use their legal authorities to carry out conservation programs for listed species. It also requires these agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of any endangered or threatened species, or to adversely modify its designated critical habitat (if any). When an agency finds that one of its activities may affect a listed species, it is required to consult with the FWS to avoid jeopardy. If necessary, "reasonable and prudent alternatives," such as project modifications or rescheduling, are suggested to allow completion of the proposed activity. Where a Federal action may jeopardize the survival of a species that is *proposed* for listing, the Federal agency is required to "confer" with the FWS (although the recommendations resulting of such a conference are not legally binding).

Additional protection is authorized by section 9 of the ESA, which makes it illegal to take, import, export, or engage in interstate or international commerce in listed animals except by permit for certain conservation purposes. The ESA also makes it illegal to possess, sell, or transport any listed species taken in violation of the law. For plants, trade restrictions are the same but the rules on "take" are different. It is unlawful to collect or maliciously damage any endangered plant on lands under Federal jurisdiction. Removing or damaging listed plants on State and private lands in knowing violation of State law, or in the course of violating a State criminal trespass law, also is illegal under the ESA. In addition, some States have more restrictive laws specifically prohibiting the take of State or federally listed plants and animals.

The Petition Process

Petitions are formal requests to list a species that require published findings. We (or the National Marine Fisheries Service for most marine species) must make a finding within 90 days of receiving a petition (to the extent practicable) as to whether there is "substantial information" indicating that the petitioned listing *may be* warranted. If this preliminary finding is positive, a status review is conducted. Within one year of receipt of the petition, we must make a further finding that the listing either *is* or *is not* warranted. A positive one-year finding can be incorporated into a proposed listing or, if a prompt proposal is precluded by other listing activities, the proposal may be deferred. These "warranted but precluded" proposals require subsequent one-year findings on each succeeding anniversary of the petition until either a proposal is undertaken or a "not warranted" petition finding is made.



The Public Review Process

Because the FWS wants all potentially interested parties to be aware of the listing proposal and have an ample opportunity to provide comments, a press release announcing the proposal is published in area newspapers, and personal contacts are made by Field Office, Regional Office, and Washington Office personnel. Cities and counties, State agencies, Federal agencies, Congressional offices, local organizations, and others are notified directly.

A 60-day public comment period begins once a listing proposal is published in the *Federal Register*. A public hearing must be held if one is requested within 45 days of publication of the proposed rule. Public meetings also may be held in areas where the species occurs to provide the public with information about the species and the proposed listing. The public comment period may be extended or reopened at any time; however, extensions must be within reason because the ESA requires the final listing determination to be completed within one year of the proposal's publication date.

Peer Review

By law, the FWS must base its listing decisions on the best scientific and commercial (trade) data available. To ensure that good science is part of the process, the FWS contacts several peer reviewers during the open comment period, provides them with the listing proposal, and asks them to review the document for scientific accuracy. Current FWS policy requires contacting at least three independent reviewers. They are free to comment on any aspect of the proposal, but they may also be asked to consider specific questions regarding the species' taxonomy or biology.

The Final Determination

The listing proposal has been published, the public has been notified, public hearings and/or meetings have been conducted, leading scientific experts have provided peer review, and all comments have been addressed. What happens next? The final rule containing the listing decision is drafted, undergoes the same review process summarized above, is signed by the Director, and is published in the *Federal Register*. A decision on whether to make the proposed listing final must be completed within 12 months from when the proposal is published. If the final decision is positive, the rule becomes effective 30 days after publication (to allow Congress to review the listing) and the species is officially added to the Federal endangered and threatened species list. Many innovative conservation tools have been developed in recent years to assist with the conservation of endangered and threatened species. The sooner imperiled species can be identified and conservation measures can be initiated, the greater the likelihood for recovery and eventual delisting.

Chapman rhododendron **(Rhododendron chapmanii), an endangered plant from Florida**
Photo by E. LaVerne Smith/USFWS

Until recently, Dr. Nicholopoulos was Chief of the Branch of Conservation and Classification, part of the Division of Endangered Species in the FWS Arlington, Virginia, headquarters office. She is now the Field Supervisor for the FWS New Mexico Ecological Services Field Office in Albuquerque.

The Federal Role in Habitat Protection

By Terry Rabot

Red-cockaded woodpecker
USFWS photo by John & Karen Hollingsworth

The Endangered Species Act (ESA) has broader mandates than simply directing the Fish and Wildlife Service to protect listed plants or animals. It directs *all* Federal agencies, not just the Fish and Wildlife Service and National Marine Fisheries Service, to participate in endangered species conservation. Specifically, section 7 of the ESA charges Federal agencies to aid in the conservation of listed species (section 7 (a)(1)) and requires Federal agencies to ensure that their activities will not jeopardize the continued existence of listed species or adversely modify designated critical habitats (section 7 (a)(2)).

Federal Conservation Activities

One way that we actively carry out conservation activities for listed species under section 7(a)(1) is through our Partners for Fish and Wildlife Program. This program is geared toward habitat restoration on private lands. Listed species are considered a priority in this program; as a result, habitat restoration efforts funded by the Partners program have directly benefitted a number of listed species, such as the Louisiana black bear *(Ursus americanus luteolus)* and the red-cockaded woodpecker *(Picoides borealis)*.

Other Federal agencies also have used their existing authorities to conserve listed species. For example, some wildlife conservation programs administered by the U.S. Department of Agriculture's Natural Resources Conservation Service, including the Wetland Reserve Program, the Wildlife Habitat Incentive Program, the Conservation Reserve Program, and the Environmental Quality Incentive Program, have incorporated listed species.

The Consultation Process

The provision under section 7 that is most often associated with the FWS and other Federal agencies is section 7(a)(2). It requires Federal agencies to consult with the FWS to ensure that actions they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. FWS issued regulations in 1986 detailing the consultation process, and we have since completed a handbook describing the process in detail (see website address below).

Before initiating an action, the Federal action agency (the agency planning a specific action), or its non-Federal permit applicant, must ask the FWS to provide a list of threatened, endangered, proposed, and candidate species and designated critical habitats that may be present in the project area. If we answer that no species or critical habitats are present, then the Federal action agency has no further ESA obligation under section 7(a)(2) and consultation is concluded. If a species is present, then the Federal action agency must determine whether the project *may affect* a listed species. If so, consultation is required. If the action agency determines (and the FWS agrees) that the project *does not adversely affect* any listed species, then the consultation (informal to this point) is concluded and the decision is put in writing.

On the other hand, if the Federal action agency determines that a project *may adversely affect* a listed species or designated critical habitat, formal consultation is required. There is a designated period of time in which to consult (90 days), and beyond that,

another set period of time for the FWS to prepare a biological opinion (45 days). The determination of whether or not the proposed action would be likely to jeopardize the species or adversely modify its critical habitat is contained in the biological opinion. If a *jeopardy* or *adverse modification* determination is made, the biological opinion must identify any *reasonable and prudent alternatives* that could allow the project to move forward.

If the FWS issues either a *nonjeopardy* opinion or a jeopardy opinion that contains reasonable and prudent alternatives, it may include an incidental take statement. "Take" is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting or attempting to engage in any such conduct. ("Harm" is further defined to include significant habitat modification or degradation that results in death or injury to a listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.) "Incidental take" is defined as take that is incidental to, and not the purpose of, an otherwise lawful activity. The FWS must anticipate the take that may result from the proposed project and, providing such take will not jeopardize the listed species, describe that take in the incidental take statement. The latter contains clear terms and conditions designed to reduce the impact of the anticipated take to the species; these terms are binding on the action agency.

Results of Agency Cooperation

The FWS responds to thousands of consultation requests every year. (In Fiscal Year 1999, for example, the FWS informally consulted on about 12,000 actions.) The vast majority of evaluated actions have no effect on listed species or their designated critical habitat. A large percentage of projects that would have, at least as initially planned, adverse impacts to listed species are dealt with through informal consultation, in which the Federal action agency makes changes to the project design so that impacts to listed species are avoided. Sometimes formal consultation is required, and even less frequently, the FWS determines that a project may jeopardize listed species or adversely modify a designated critical habitat. These conflicts, rather than the thousands of projects that move forward with little or no changes or negative impacts on wildlife, are often highlighted in the media. (Again, in FY 1999, the FWS conducted 83 formal consultations and issued 1 jeopardy opinion.) As more and more Federal agencies begin to work proactively with the FWS under section 7(a)(1), the conservation benefits should be reflected in an even lower number of jeopardy opinions.

We plan to provide more written guidance to other Federal agencies on how to meet their conservation obligations under section 7(a)(1). Once completed, this guidance will make it easier for other Federal agencies to actively promote the welfare and ultimate recovery of listed species. For more information, see our section 7 webpage at http://endangered.fws.gov/section7/index.html.

Terry Rabot is a Biologist with the Division of Endangered Species, Branch of Consultation and HCPs, in the FWS Arlington, Virginia, headquarters office.

The Louisiana black bear in this picture was one of the largest ever captured on Tensas River National Wildlife Refuge, weighing in at over 400 pounds. The bear was trapped using a leg-hold cable snare that does not injure the animal. The biological information obtained, including weight, sex, a tooth for aging, and other measurements, are part of the Service's ongoing research efforts to aid in the recovery of this threatened subspecies. Afterwards, the bear was released on site.
Photo by Dan Anderson/USFWS

Habitat Conservation Planning

By Marj Nelson

Least Bell's vireo
USFWS photo by B. Moose Peterson/WRP

The HCP program has prompted local citizens to think about the future of their communities, the issues affecting their quality of life, and how conservation plays a role in these issues. By working together, State and local governments and private developers have found that they can accomplish their plans *and* conserve the environment.

A logger fells a tree housing a nest of endangered red-cockaded woodpeckers *(Picoides borealis)*. A farmer runs his tractor through a field that harbors the endangered Karner blue butterfly *(Lycaeides melissa samuelis)*. A community builds a school on already limited habitat for the endangered Key deer *(Odocoileus virginianus clavium)*.

These situations could be devastating, not only to the rare species but also to the landowners who want to use their land for legitimate purposes. After passage of the Endangered Species Act (ESA) of 1973, both the Federal government and non-Federal landowners became concerned that a property owner's otherwise lawful activity that might result in the unintentional take of a listed species would be prohibited, even if the landowner was willing to plan activities to conserve the species. To resolve this problem, Congress amended section 10 of the ESA in 1982 to authorize "incidental take" through the development and implementation of Habitat Conservation Plans or HCPs.

This approach was patterned after the San Bruno Mountain HCP, an innovative land-use plan in California's San Francisco Bay area that began with a classic conflict between development activities and endangered species protection. This planning effort culminated in the issuance of the first incidental take permit in 1983. What made the San Bruno Mountain case unusual at the time was that it attempted to resolve conflicts through negotiation and compromise rather than continued litigation.

An incidental take permit allows a property owner to conduct otherwise lawful activities in the presence of listed species. A non-Federal entity (e.g., a landowner or local government) develops an HCP in order to apply for an incidental take permit under section 10(a)(1)(B) of the ESA. The HCP integrates the applicant's proposed project or activity with the needs of the species. It describes, among other things, the anticipated effect of a proposed taking on the affected species and how that take will be minimized and mitigated. Such information must be submitted with any incidental take permit application.

For example, the International Paper Company developed an HCP covering the red-cockaded woodpecker on company lands in the southeast. This HCP describes the impact of timber operations on the red-cockaded woodpecker and measures to mitigate that impact. Such measures include actively managing approximately 5,300 acres (2,145 hectares) of habitat in order to increase the population on that habitat to 25-30 family clusters.

To encourage the private sector to develop long-term conservation plans, we must assure the financial and development communities that an incidental take permit will remain in effect for the life of the project. For this reason, the HCP process now contains "No Surprises" assurances to non-Federal landowners. These assurances specify that the Services (FWS and National Marine Fisheries Service) will not require additional commitments (land, water, or financial compensation) or restrictions (on the use of land, water, or other natural resources) beyond those specified in the HCP unless the permittee consents. The Services will

Key deer
Photo by Dick Dickenson

honor these assurances as long as a permittee upholds the terms and conditions of the HCP, the permit, and other associated documents. In other words, we will honor our commitments as long as HCP permittees honor theirs.

But what happens with species that aren't listed yet? Congress authorized HCPs to include conservation measures for candidate species, proposed species, and others of concern at the time an HCP is developed or a permit application is submitted. This can benefit the permittee by ensuring that the terms of an HCP will not change over time with subsequent species listings. It can also provide early protection for many species, ideally preventing declines and, in some cases, the need to list a species.

The "No Surprises" rule applies only to species covered by an HCP. Thus, landowners have an incentive to conserve both listed and unlisted species, an incentive that generally does not exist outside of the HCP process. By covering unlisted species, developers and landowners can also help prevent their declines.

In California, the Multiple Species Conservation Plan for southwestern San Diego County covers 85 species of vulnerable plants and animals, including numerous resident and migratory birds such as the coastal California gnatcatcher *(Polioptila californica californica)*, least Bell's vireo *(Vireo bellii pusillus)*, and southwestern willow flycatcher *(Empidonax traillii extimus)*. The centerpiece of the plan is the creation of a 171,900-acre (69,500-ha) preserve that will secure key parcels of native habitat. The plan also provides certainty and predictability for land use planners and landowners by providing a blueprint that defines areas appropriate for conservation and development.

The conservation actions of an HCP can also work at an ecosystem or landscape level. This approach is being used increasingly with the development and completion of regional and multi-species HCPs. Regional planning benefits the species in an ecosystem while streamlining ESA compliance for the smaller landowners. This type of HCP encourages local governments to look beyond ESA requirements and take a landscape view at planning for their community. For example, Pima County, Arizona, is undertaking a visionary, collaborative, county-wide planning effort to provide landscape-level protection for natural and cultural resources in this part of the Sonoran Desert. One of the unique aspects of the Sonoran Desert Conservation Plan is that is moves beyond ESA planning by consolidating previously fragmented planning elements within the county.

The demand for HCPs has increased tremendously in recent years. By 1992, only 14 HCPs had been approved. By the end of 1999, however, the FWS had issued more than 290 incidental take permits covering approximately 20 million acres (8 million ha) of land, 200 listed species, and many unlisted species. For more information, visit our HCP website at: http://endangered.fws.gov/hcp/.

As we look to the future, we anticipate many more success stories. As the demand for HCPs increases and more are approved, providing careful attention to each one will become more challenging. In facing this challenge, we will continue to enlist the support of others, including environmental and scientific communities; State, local and tribal governments; landowners; and other stakeholders. Working together, we can create innovative strategies that enrich species conservation while accommodating economic development.

Marj Nelson is a Biologist with the Division of Endangered Species, Branch of Consultation and HCPs, in the FWS Arlington, Virginia, headquarters office.

Endangered Species Timeline

The following timeline summarizes some of the many events, both positive and negative, in our nation's growing effort to conserve our rare animal and plant resources:

PRE-1970

1903 President Theodore Roosevelt establishes the first National Wildlife Refuge at Pelican Island, Florida, to protect wood storks, brown pelicans, and other dwindling water birds.

1914 The passenger pigeon, once the most abundant bird in North America, and the Carolina parakeet both become extinct.

1944 Whooping crane population reaches nadir with 21 birds remaining.

1962 Rachel Carson's *Silent Spring* warns of impacts on wildlife and people from unregulated pesticide use.

1966 Endangered Species Preservation Act of 1966 authorizes land acquisition to conserve "selected species of native fish and wildlife."

1969 Endangered Species Conservation Act of 1969 expands on 1966 act, authorizing the compilation of a list of wildlife "threatened with worldwide extinction" and prohibiting their import without a permit, except as specifically allowed for zoological and scientific purposes and propagation in captivity. Crustaceans and mollusks are included for protection, along with mammals, fish, birds, and amphibians.

1970's

1970 Peregrine falcon is listed as endangered.

1972 The Environmental Protection Agency outlaws DDT as a pesticide because of its potential danger to people. The chemical is linked to the thinning of eggshells of bald eagles and peregrine falcons, reducing hatching success and contributing to their endangered status.

1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—80 nations sign this treaty to protect designated plant and animal species by regulating or prohibiting international trade in certain taxa except by permit

1973 Endangered Species Act of 1973 supersedes earlier acts, broadens and strengthens protection for all plant and animal species listed by the U.S. as threatened or endangered, prohibits take and trade without a permit, requires Federal agencies to avoid jeopardizing their survival, and requires species recovery efforts.

1977 First plant species are listed as endangered—San Clemente Island Indian paintbrush, San Clemente Island larkspur, San Clemente Island broom, and San Clemente Island bush- mallow.

1978 Endangered Species Act Amendments of 1978 include the establishment of a Cabinet- level Endangered Species Committee authorized to exempt Federal actions from compliance with certain protective provisions (section 7) of the Act.

1979 Endangered Species Committee meets in January and exempts Grayrocks reservoir project in Wyoming from section 7 of the Act but denies exemption for Tellico Dam project in Tennessee.

1979 In September, Congress passes an appropriations bill that includes an exemption for the Tellico Dam project, flooding critical habitat of the snail darter.

1980's

1981 Black-footed ferrets rediscovered near Meeteetse, Wyoming, ending fear that the species was extinct.

1982 Endangered Species Act Amendments of 1982 allow, by permit, the taking of listed species incidental to otherwise lawful activities, provided that the permit holder implements a habitat conservation plan (HCP) for the species. The 1982 amendments also include a prohibition against taking plants on Federal lands.

1983 First HCP approved for San Bruno Mountain, California.

1985 Southeastern brown pelican delisted due to recovery.

1987 American alligator delisted due to recovery.

1987 Red wolf reintroduced into wild in North Carolina.

1987 Last dusky seaside sparrow dies in captivity.

1989 U.S. bans ivory imports to reduce poaching of African elephants.

1989 Hurricane Hugo devastates red-cockaded woodpecker habitat in South Carolina.

1990's

1991 Captive-propagated black-footed ferrets reintroduced into Wyoming several years after last wild population was captured to prevent extinction from disease outbreak.

1991 California condor reintroduced into wild in southern California.

1993 Whooping crane reintroduced into Florida to establish non-migratory flock.

1993 Canaan Valley National Wildlife Refuge in West Virginia designated as nation's 500th refuge in the national system.

1994 Eastern North Pacific population of gray whale delisted due to recovery.

1994 Arctic peregrine falcon delisted due to recovery.

1995 Gray wolf reintroduced into Yellowstone National Park and central Idaho.

1995 U.S. Supreme Court, in its "Sweet Home" decision, upholds FWS regulations that define "harm" to include destroying or modifying habitat for an endangered or threatened species if the action results in the taking of the species.

1996 California condor reintroduced into northern Arizona.

1999 American peregrine falcon delisted due to recovery.

1999 Aleutian Canada goose proposed for delisting due to recovery.

1999 Bald eagle proposed for delisting due to recovery.

Endangered Species Recovery Program

by Charlie Scott

Currently, wood stork nesting colonies are found in South Carolina, Georgia and Florida. In the early 1930's, the species' population totaled 75,000 birds. By the early 1980's, however, the population had declined to 5,000 nesting pairs. The likely explanation for the decline was the reduction in the food base caused by the modification or loss of wetland habitats. In the 1990's, the stork's total population increased to 6,000 nesting pairs in 59 active colonies in Florida, Georgia, and South Carolina.
Photo by Barron Crawford

The Endangered Species Act has as its primary purpose the conservation of endangered and threatened species and the ecosystems upon which they depend. It focuses on a single, ultimate goal: to recover listed species to a point where they have become secure, self-sustaining components of their ecosystems and no longer need protection by the Act. A cornerstone of the recovery process is understanding and removing the threats to listed species.

Restoring threatened and endangered species presents a tremendous challenge. At the time of listing, many species face multiple threats and have a very limited habitat base. Most listed species have their own unique sets of recovery problems and solutions. In some cases, no effective measures to arrest the causes for a species' decline may be available or even known. An example is the threat posed by the rapidly increasing number of non-native, invasive species such as the zebra mussel.

Reversing long-term declines and conserving the habitat of listed species, while also accommodating society's goals, requires innovative solutions. Successful recovery often takes many years of research, restoration, protection, and active management. The growing number of recovery successes, such as the peregrine falcon, bald eagle, and Aleutian Canada goose, illustrate what is needed to achieve recovery of threatened and endangered species. For example, in 1999, the Fish and Wildlife Service delisted the American peregrine falcon after the 1972 Environmental Protection Agency ban on the pesticide DDT and more than 25 years of recovery actions and protection under the Act. This recovery milestone was the result of a coordinated and dedicated effort by academia, falconry experts, the states, conservation organizations, the Service, and other federal agencies.

Implementing the Service's Endangered Species Recovery Program for more than 1,200 listed species involves staff in offices from all the key Service programs, including Ecological Services, Refuges, Fisheries, Law Enforcement, and Partners for Fish and Wildlife. In addition, the Service has many public and private partners in the recovery effort: other federal, state, and local agencies; tribes; conservation organizations; businesses; and private landowners.

The first step in the recovery process is the preparation of a plan that provides a comprehensive recovery strategy and a prioritized list of conservation measures needed to address threats, reverse declines, and achieve recovery. The Service's policy is to develop draft recovery plans within one-and-a-half years of the date of species listing, complete the development of final recovery plans within two and half years of listing, and seek multi-stakeholder participation on all draft recovery plans. Over the past 5 years, the Service has significantly increased the number of listed species covered by approved recovery plans, from 54 percent in 1995 to 79 percent in 1999. Recovery plans currently are under development for most of the remaining listed species.

Some recovery plans are developed by recovery teams, which are appointed by the appropriate Regional Director with lead authority for those species. Team members usually have expertise on the biology of the listed species, the threats to its survival, or other disciplines

needed to address recovery. The Service also emphasizes participation by landowners and other effected stakeholders on recovery teams. An essential part of the recovery planning process involves identifying these parties and developing partnerships so that creative ways of implementing recovery actions can be accomplished.

Listed species may share similar habitats and face similar threats, so addressing their recovery needs in a "multi-species" or "ecosystem" recovery plan is often more efficient and effective than implementing an individual plan for each species. As of December 31, 1999, there were 1,205 U.S. (Service-listed) species, of which 924 were covered in 512 approved recovery plans, an indication of the trend toward more multi-species plans. For example, the Recovery Plan for the Upland Species of the San Joaquin Valley, California, addresses 34 species of plants and animals. The recently completed South Florida Multi-Species Recovery Plan applies an ecosystem approach to the recovery of 68 listed species in 23 ecological communities.

Where recovery planning identifies the strategy and actions necessary to recover species, recovery implementation "puts the plan to work" through a multitude of conservation activities. Restoring species to self-sustaining, functioning components of their ecosystems is normally a highly interactive, methodical, and expensive process. Flexibility in changing the course of recovery tasks based on new information or set-backs, also know as adaptive management, is essential to successful species recovery.

The highest priority recovery actions involve efforts to prevent the extinction of species. Another frequent first step in moving a threatened or endangered species towards recovery is gaining an understanding of the threats and the effects those threats have on population status. The ecological requirements for feeding, breeding, sheltering, and nurturing may not be fully understood at the time a species is listed. Recovery implementation covers a myriad of other important actions, such as managing threats through habitat protection and restoration or augmenting a severely depleted population with captive breeding. All recovery activities require time for a threatened or endangered species to respond biologically. There is no "silver bullet" or "quick fix" to endangered species recovery.

The Service engages many different stakeholders in the recovery implementation process to conserve endangered and threatened species. We place special emphasis on establishing programs and opportunities for flexibility and assurances to private property owners to increase their participation in conserving and recovering listed species. In July 1999, the Service completed its Safe Harbor policy. Safe Harbor agreements promote recovery through voluntary conservation actions by non-federal property owners for listed species; in turn, the Service provides assurances that no additional future regulatory restrictions will be imposed for their efforts. There are currently 44 Safe Harbor agreements covering more than 1.3 million acres. In 1999 and 2000, Congress funded the ESA Landowner Incentive Program, which allows the Service to increase technical and financial assistance for private property owners that implement voluntary conservation actions for listed, proposed, and candidate species.

The Fish and Wildlife Service is working with The Peregrine Fund and the agricultural community in southeastern Texas to restore the endangered northern aplomado falcon to this part of its former range. Private land owners have entered into Safe Harbor agreements covering more than one million acres in this area.
Photo by Steve Bentsen

Charlie Scott is Chief of the Branch of Recovery and Delisting, Division of Endangered Species, in the Service's Arlington, Virginia, office.

Lessons from Leopold in Assessing the ESA

by Michael J. Bean

Some 63 years ago, Aldo Leopold called the need to conserve threatened forms of wildlife "the crux of conservation policy."[1] Nearly four decades later, Congress made the first serious national effort to address this challenge. With enactment of the Endangered Species Act of 1973 (ESA), Congress undertook to stem the loss of the nation's most imperiled plant and animal life.

We now have more than a quarter century's experience with which to evaluate the law's impact. In doing so, it is useful to keep in mind that Leopold carried with him a notebook in which he jotted down quotations that he found noteworthy. One came from Robert Louis Stevenson: "to hold the same views at 40 as we held at 20 is to have been stupefied for a score of years."[2] With the benefit of more than a score of years of experience under the ESA, it is time to reexamine it.

Leopold is an appropriate guide for this task because a good argument can be made that the success or failure of the ESA will be determined by how well it works on private lands. First, very few endangered species have all of their habitat on Federal land. Many have none of their habitat there, and many more have a substantial portion of their habitat on non-Federal (and mostly private) land. Second, outside of the West, federal land comprises less than a tenth of the land area of most states, and even in parts of the West, such as California, many of the concentrations of endangered species are on private rather than federal land. As Leopold noted, "[t]he only progress that counts is that on the actual landscape of the back forty,"[3] and most of the back forty is in private ownership.

One could change all this simply by acquiring all the habitat needed for each species. The magnitude of that challenge, however, is revealed by the recent agreement to spend several hundred million dollars to acquire a very tiny fraction of the existing habitat of the threatened marbled murrelet. In the 1930's public land acquisition for conservation purposes began in a big way. Leopold hailed the fact that "[f]or the first time in history we are buying land on a scale commensurate with the size of the problem."[4] At the same time, however, he warned that land acquisition alone was not a sufficient conservation strategy. He worried that "[b]igger buying ... is serving as an escape mechanism—it masks our failure to solve the harder problem. The geographic cards are stacked against its ultimate success. In the long run it is exactly as effective as buying half an umbrella."[5]

The "harder problem" to which Leopold referred was the problem of ensuring proper management of land not in public ownership. Failure to solve that problem leaves wildlife resources huddled under Leopold's metaphorical half an umbrella. If private lands are not managed compatibly with the needs of species found on public lands, then those public lands will, at best, become islands of protected habitat, too small in many instances to support viable populations of imperiled species, too far removed from each other to enable dispersal and genetic interchange, too few in number to guard against the vagaries of demographic chance and natural disaster, and too exposed to threats from outside their boundaries from pollution, exotic species, water depletion, and other factors.

Leopold recognized two approaches to conservation on private land: one attempts to deter undesirable practices through prohibition and regulation; the other encourages desirable practices through incentives. The administrators of the ESA have thus far relied upon the tool of regulation; they are only now beginning to explore the tool of incentives. Strict regulation will continue to be needed, particularly in urbanizing landscapes, where development threatens permanent losses of habitats and the rare species they support.

Habitat conservation plans have been used most often, and probably have their most useful potential, in these urbanizing landscapes. When landowners are developers, intent on converting raw land into suburban subdivisions, the conservation tradeoffs are stark. Land either remains unconverted and retains some or all of its habitat value for endangered species, or it is converted and typically loses all of its habitat value for such species. In this context, habitat conservation plans are a mechanism to win from deep-pocketed development interests the dedication of at least some land to conservation purposes, and the funding to manage those lands appropriately, in exchange for sacrificing other lands to development. It is admittedly a Faustian bargain, but the alternative of just saying no to all future development in endangered species hotspots like southern California, Florida, and much of the Sunbelt, is wishful thinking.

The stark all-or-nothing choices facing conservation in the urbanizing landscape are different from the choices

Aldo Leopold
Aldo Leopold Foundation photo

in the "working landscape" of farms, ranches, and forest lands. Here, the choices are not between land uses with no habitat value and other uses with ample habitat value. Rather, they are between means of farming, ranching, and forestry that provide relatively more habitat value for imperiled wildlife and those that provide relatively less. The challenge is to make it in the interests of these landowners to make the environmentally preferable choice.

Unfortunately, it is in this working landscape that the ESA's results have been most disappointing. Rather than enlisting working landscape landowners as allies in the effort to conserve imperiled species, the ESA has made them wary of involvement. Landowners who might restore habitats, control exotics, manage to achieve desired successional stages, or allow rare species to be reintroduced to their land have been reluctant to do these things for fear that such good deeds will only be rewarded by the imposition of land use restrictions once rare species respond by occupying their land. Thus, while the ESA's prohibitions aim to prevent the destruction of the habitats that support endangered species today, those same prohibitions have sometimes deterred landowners from creating the habitats that will be needed to support those species tomorrow.

Leopold recognized that economic self-interest would not often cause landowners to conserve threatened species. Indeed, this fact is exactly what set threatened species apart from game species in Leopold's mind. He observed that "[m]ost species of shootable non-migratory game have at least a fighting chance of being saved … [because] powerful motives of local self-interest are at work in their behalf."[6] But the same cannot be said "of those species of wilderness game which do not adapt themselves to economic land-use, or of migratory birds which are owned in common, or of non-game forms classed as predators, or of rare plant associations which must compete with economic plants and livestock, or in general of all wild native forms which fly at large or have only an esthetic and scientific value to man."[7] Leopold astutely observed that "[t]he private owner who today undertakes to conserve beauty on his land, does so in defiance of all man-made economic forces from taxes down—or up."[8] He referred to the landowners on whose land rare species occurred as "the 'suppressed minorities' of conservation."[9] Calling such landowners "custodian[s] of a public interest," he forecast "that conservation will ultimately boil down to rewarding the private landowner who conserves the public interest."[10]

Leopold's belief that rewarding private landowners who conserve the public interest is the key to successful conservation reflected an evolution in his thinking. A decade earlier, he put more hope in the promise of regulation. Then he wrote that "to protect the public interest, certain resources must remain in public ownership, and ultimately the use of all resources will have to be put under public regulation, regardless of ownership."[11] By 1934, he was willing to compress the history of conservation in America into two sentences: "We tried to get conservation by buying land, by subsidizing desirable changes in land use, and by passive restrictive laws. The last method largely failed; the other two have produced some small samples of success."[12]

A similar compressed history of the ESA might be written at this point. By buying land, we have achieved some small samples of success in protecting endangered species. Through restrictive regulation, we have largely failed to improve the status of rare species, though we have prevented the status of some from deteriorating as much as they otherwise might have done. We have yet to make a serious effort at subsidizing desirable changes in land use for the benefit of endangered species. That is the most urgent task that lies ahead.

Michael J. Bean is a lawyer with the Environmental Defense Fund in Washington, D.C.

Notes:

[1] "Threatened Species: A Proposal to the Wildlife Conference for an Inventory of the Needs of Near-Extinct Birds and Animals," reprinted in *River of the Mother of God; and Other Essays*, U. of Wisconsin Press, 1999.

[2] Robert Louis Stevenson, quoted in "Sage for All Seasons," *Smithsonian* (Sept. 1998).

[3] "The Ecological Conscience" reprinted in *River of the Mother of God*.

[4] "Conservation Economics," reprinted in *River of the Mother of God*.

[5] *Id.*

[6] "Threatened Species," supra note 1.

[7] *Id.*

[8] "Land Pathology," in *River of the Mother of God*.

[9] "Conservation Economics," supra note 3.

[10] *Id.*

[11] "Pioneers and Gullies," reprinted in *River of the Mother of God*.

[12] "Conservation Economics," supra note 3.

Enforcing the Law for Endangered Species

by Sandra Cleva

A Fish and Wildlife Service wildlife inspector intercepts an illegal rhinoceros trophy in Alaska.
USFWS photo

In 1973, the Endangered Species Act (ESA) launched a new era in wildlife law enforcement. Federal officers had been on the wildlife "beat" since 1900, but their work focused primarily on protecting waterfowl and supporting State management of game species. The ESA, however, safeguards hundreds of animals and plants throughout the world and hundreds more that are covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), making U.S. Fish and Wildlife Service law enforcement part of a global force protecting wildlife.

Our special agents investigate nearly 5,000 cases each year involving ESA violations. Crimes range from take and habitat destruction to large-scale commercial exploitation. Our wildlife inspectors, stationed at major ports and border crossings, monitor wildlife imports and exports, providing a frontline defense against illegal wildlife trade. Forensic specialists at our agency's National Fish and Wildlife Forensics Laboratory support enforcement efforts by identifying from which species seized wildlife parts and products came; developing scientific evidence to link suspects, wildlife "victims," and crime scenes; and determining the cause of death in cases where illegal take is suspected.

Cases involving take, such as wolf shootings, often grab headlines, but our enforcement mission is far more complex. Protecting listed species demands initiative. Outreach to ranchers in Wyoming, for example, gave reintroduced gray wolves *(Canis lupus)* a better chance of surviving outside of Yellowstone National Park. Backcountry patrols in grizzly bear *(Ursus arctos)* territory and educational programs for guides, outfitters, and hunters help prevent both bears and people from being injured or killed. Agents have also worked to defuse conflicts along the California coast, where shellfishing companies are concerned about the apparent range expansion of southern sea otters *(Enhydra lutris nereis)*.

Preventive enforcement preserves opportunities for species recovery. In Florida, special agents conduct coastal boat patrols, enforcing speed limits that shield manatees *(Trichechus manatus)* from deadly collisions. A cooperative program at Vandenberg Air Force Base in California keeps the largest active breeding colony of western snowy plovers *(Charadrius alexandrinus nivosus)* free from human intrusion during the breeding season. Although closing a Massachusetts beach to vehicle traffic to protect nesting piping plovers *(Charadrius melodus)* was not popular, our officers met with area residents to promote public cooperation.

Habitat intrusion can, of course, escalate to habitat destruction. In Florida, special agents brought charges against a citrus farmer who cleared some of the last remaining Florida scrub-jay *(Aphelocoma coerulescens)* habitat. Recent habitat investigations in California have focused on protected kangaroo rats *(Dipodomys* spp.*)*, lizards, butterflies, frogs, snails, and the Delhi Sands flower-loving fly *(Rhaphiomidas terminatus abdominalis)*. In Rialto, for example, industrial plants developed a habitat conservation plan (HCP) and obtained an incidental take permit for this rare nectar-eating species, the fly world's equivalent of a hummingbird.

Fines and penalties are needed when landowners or developers destroy habitat essential to the survival of protected species. But law enforcement also works to prevent such losses by supporting the development of HCPs and monitoring compliance once the plan is in place. Our agents in Utah, for example, successfully helped promote HCPs for the threatened desert tortoise *(Gopherus agassizii)* and Utah prairie dog *(Cynomys parvidens)*.

Contaminants cases are an increasing part of our enforcement workload. In Utah, agents investigated a sewage treatment plant that was leaking selenium into the Green River system, contaminating waters occupied by the endangered razorback sucker *(Xyrauchen texanus)*. Armed with data from our biologists, agents helped prompt State and local efforts to secure the $14.2 million needed to replace the plant. Similar interdisciplinary cooperation in Georgia brought an array of environmental and ESA charges against a chemical plant that dumped nearly 150 tons of mercury into coastal waters, poisoning the aquatic food chain, interrupting the breeding of endangered wood storks *(Mycteria americana)*, and endangering human health. Successful pursuit of a contaminants case in central California cost the owners of a large poultry operation more than $1.2 million. The company was pumping manure-tainted wastewater directly into wetlands on the San Luis National Wildlife Refuge, contaminating vernal pools containing endangered fairy shrimp *(Branchinecta* sp.*)*. By forcing such companies to reduce contaminant impacts, the law enforcement program encourages compliance by others, thereby helping to improve the environment for wildlife and people alike.

Our law enforcement program also helps to protect endangered species around the world. Wildlife inspectors at U.S. ports of entry examine imports and exports for compliance with wildlife laws and CITES. Often, these inspectors intercept smuggled goods that range from sea turtle eggs to traditional Asian medicines allegedly made from tiger *(Panthera tigris)* bone and rhino horn.

This 12-foot, 2,000-pound manatee was killed by a power boat. Fish and Wildlife Service agents are enforcing boat speed limits to reduce such tragedies in the future.
USFWS photo

Many investigations of illegal wildlife trafficking start with the work of a wildlife inspector. A multi-year probe that ultimately uncovered the smuggling of more than 1,500 CITES-protected Latin American tarantulas began at Chicago's O'Hare International Airport when an inspector stopped a man bringing 8 rare spiders into the country without CITES permits. In Tampa, Florida, an inspector intercepted a shipping container packed with some 350 boxes and packages of protected coral and seashells. That seizure launched an investigation that documented 6 years of smuggling and resulted in the nation's first Federal felony conviction for coral trafficking.

Sometimes the only way to document illegal trade is to infiltrate the smuggling underworld itself. A recent 5-year global probe successfully penetrated the business of illegal reptile trafficking. Undercover agents posing as wildlife importers and reptile collectors snared more than two dozen wildlife profiteers in the United States and overseas, and broke up international smuggling rings dealing in some of the world's most rare reptiles.

Over the years, our special agents and inspectors have played a key role in helping other countries protect endangered species. They routinely provide training, outreach, and technical assistance to global counterparts. Recent examples include CITES enforcement workshops in China and Madagascar and anti-poaching training in Tanzania and Thailand.

The ESA has proven a powerful tool for wildlife conservation during its first quarter century. But like any law, its effectiveness depends in part on enforcement. Special agents and wildlife inspectors provide this key component.

Sandra Cleva is a Writer-Editor for the FWS Office of Law Enforcement in Arlington, Virginia.

Preserving Our Endangered Heritage

by Mark Madison

The magnifying glass used by Rachel Carson during her 17-year career with the Fish and Wildlife Service is a cherished momento of her contributions to wildlife conservation.
USFWS photo

History, like wildlife, can become endangered through indifference or destruction. With that thought in mind, the Fish and Wildlife Service (FWS) created a Heritage Committee a little more than a year ago to oversee the preservation of our agency's historic role in wildlife management. To this end, the Committee oversaw the creation of archives, the hiring of our agency's first historian, and national campaigns to collect objects, texts, and oral histories from those who shaped our history. Wildlife conservation and endangered species have played a prominent role in these histories.

The FWS has been at the forefront of species protection and reintroduction in recent years, but Heritage Committee discoveries have found this was not always the case. In 1917, for example, Dr. Edward Nelson, the head of our predecessor agency, the Biological Survey, enthusiastically reported, "There is little question that in five years we can destroy most of the gray wolves and greatly reduce the numbers of other predatory animals."

In the ensuing 82 years, the FWS and its predecessors have evolved from the premier predator eradication agency to a conserver of wild things. Charting the changing role of our agency in response to new ideas in wildlife conservation and environmental protection has been a primary objective of Heritage Committee members as they seek to make sense of our tangled environmental legacy. Through examining historical records, we have discovered that some early FWS biologists, such as Olaus Murie, said as early as the 1940's that the agency should eliminate its predator control efforts and focus on restoration.

The other area in which the Heritage Committee tells the history of endangered species is through displays and interpretation of the work of wildlife law enforcement. The FWS role in wildlife protection began in 1900 with the Lacey Act. Initially restricted to our nation's borders, the agency's enforcement activities have grown to be international in character. The Heritage Committee has traced this change and attempted to chart it through collections of law enforcement objects, oral histories and reports of agents, and weapons and wildlife seized in protection efforts.

As an agency that has been a leader in wildlife conservation, it is important for us to preserve our history, protect it, and understand its context. The Heritage Committee is dedicated to documenting these pioneering efforts and sharing them as a link to the future. The Chair of the Committee is Dale Hall,

Deputy Director of the Service's Southeast Region.

Unusual objects that the Heritage Committee has collected include Rachel Carson's magnifying glass (opposite page) and a signed first-edition of her history-making book, *Silent Spring*. She put the magnifying glass in her desk when she left our agency in 1952. Safeguarded by co-workers through the years, it eventually ended up in the archives as an important symbol of our agency's history.

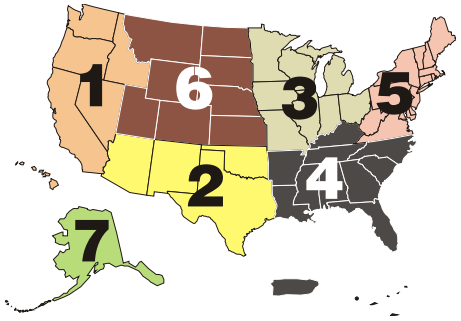
Dr. Madison taught environmental history at Harvard and the University of Melbourne in Australia before becoming the Fish and Wildlife Service's first official historian in 1999. He is at work on a book and videotape chronicling our agency's history.

Although she is known most widely for her book* Silent Spring, *Rachel Carson also wrote extensively about marine life. Her book* The Sea Around Us *won her the 1952 National Book Award for nonfiction.
Photo courtesy of the Rachel Carson Foundation

Past Directors of the Fish and Wildlife Service met with current Director Clark on June 25, 1998, at the National Conservation Training Center (NCTC) in Shepherdstown, West Virginia, to recall major developments during the past four decades.

Thanks to the Service's Heritage Committee, NCTC videotaped the interviews, preserving the images and voices of our agency's leaders. John Gottschalk died 15 months after this event.

Left to right:
Jamie Rappaport Clark, 1997 - Present
Spencer H. Smith, December 1970 - August 1973
Lynn A. Greenwalt, October 1973 - January 1981
John S. Gottschalk, October 1964 - October 1970
John F. Turner, 1989 - 1993
USFWS photo



Regional endangered species staffers have provided the following news:

Region 1

Applegate's Milk-vetch Staff from the FWS Klamath Falls, Oregon, Office assisted the Oregon Department of Agriculture (ODA)'s Plant Conservation Program in planting nearly 900 Applegate's milk-vetch *(Astragalus applegatei)* seedlings. This species is one of Oregon's most endangered plants. Only a handful of populations remain, all located near Klamath Falls. The transplanted seedlings were grown at Oregon State University by ODA staff with FWS funding. The new population is located on Miller Island, a State-owned wildlife management area.

Applegate's milk-vetch in bloom
Photo © Darren Borgias/The Nature Conservancy

Volunteers assist in the transplanting and care of Applegate's milk-vetch seedlings at Miller's Island, Oregon.
Photo © Darren Borgias/The Nature Conservancy

Oregon spotted frog Representatives of the Nisqually National Wildlife Refuge (NWR), Washington Department of Fish and Wildlife, Washington Department of Transportation, Thurston County Conservation District, and The Nature Conservancy met in fall 1999 to discuss conservation needs for Oregon spotted frogs *(Rana pretiosa)* in Thurston County, Washington. Potential actions by each party were discussed. A field trip included visits to the main population at Dempsey Creek and an adjacent dairy area where egg masses have been found. During the field trip, two adult female Oregon spotted frogs and at least five metamorphs were found on a 40-acre (16-hectare) parcel where they have not been previously documented. This parcel has some potential as a Washington Department of Transportation wildlife mitigation site.

Oil Spill One year to the day after oil spilled from the tanker vessel *Command* off the coast of San Mateo County, California, the U.S. Attorney's Office announced that it had agreed to settlement terms with the parties responsible for the spill. The vessel's owner and the operator agreed to pay approximately $4 million in damages for natural resource injuries, primarily to seabirds, resulting from the incident. The money will be used by a Natural Resource Trustee Council, made up of members from the FWS, National Oceanic and Atmospheric Administration, California Department of Fish and Game, California State Lands Commission, and California Department of Parks and Recreation, to design and implement restoration projects. The settlement funds are expected to be allocated to seabird restoration and additional projects to address shoreline habitat and lost human use. The FWS, represented by our Sacramento Fish and Wildlife Office, participated as the lead Federal trustee agency for the natural resource damage assessment activities. Working with the Department of the Interior Solicitor's Office, we were also instrumental in having an additional $200,000 of settlement funds resulting from Endangered Species Act violations allocated to the Law Enforcement Rewards Fund.

Summer Chum Salmon The Washington State Ecosystems Conservation Program (WSECP) of the U.S. Fish and Wildlife Service's (FWS) Western Washington Office has completed renovation work on a spawning channel at the University of Washington's Big Beef Creek Research Station in Kitsap County. The renovated channel will provide stable spawning habitat and monitoring opportunities for Hood Canal summer chum salmon *(Oncorhynchus keta)*, listed as threatened in March 1999. Hood Canal summer chum have been considered extirpated in the Big Beef Creek system since the late 1980's, but the nearby Quilcene National Fish Hatchery has been propagating summer chum, using brood stock from the Quilcene River, and reintroducing them to the system.

FWS employee with chum salmon at Quilcene National Fish Hatchery
Photo by Ron Wong

The WSECP in the Western Washington Office has also completed restoration of 4 acres (1.6 ha) of wetlands and 20 acres (8 ha) of juvenile salmon rearing habitat on the property of Walt Weber in Snohomish County. The restoration included construction of a series of weirs in an abandoned ditch to restore juvenile salmon access to a 16-acre (6.4 ha) wetland. The weirs also increase the wetland

Bald eagle
Corel Corp. photo

acreage by 4 acres. The wetland and a 50-foot (15-meter) buffer on both sides of the ditch will be replanted with a mixture of native conifers and wetland shrubs in spring 2000. Project partners include the landowner, Adopt-a-Stream Foundation, Stilli-Snohomish Fisheries Enhancement Task Force, Stillaguamish Tribe, and Snohomish Conservation District.

Bald Eagle *(Haliaeetus leucocephalus)* FWS staff biologist Doug Laye assisted the fire crew from the Klamath Basin NWR Complex with the first prescribed fires in almost a decade at Bear Valley NWR in Oregon. This refuge was designated specifically for its value as a winter roost for bald eagles and is host to hundreds of bald eagles in the winter and early spring. A total of 40 acres (16 ha) were under-burned in an area that had been thinned by timber operations last year. The thinning was designed specifically to benefit the growth and maintenance of large trees used by the eagles for roosting and nesting.

Reported by LaRee Brosseau of the FWS Portland, Oregon, Regional Office.

Region 5

Endangered Bats The FWS West Virginia Field Office, Canaan Valley NWR, and West Virginia Division of Natural Resources' Non-Game Wildlife and Natural Heritage Program joined to construct a large angle-iron gate at the entrance of Schoolhouse Cave in Germany Valley, Pendleton County, West Virginia. The gate, which is the largest of its kind in the world, will permanently protect a large summer and winter colony of the endangered Virginia big-eared bat *(Corynorhinus townsendii virginianus)*. A small number of Indiana bats *(Myotis sodalis)* and two species of concern, the Eastern woodrat *(Neotoma floridana)* and the small-footed bat *(Myotis subulatus)*, will also be protected by the gate.

Bat gate at Schoolhouse Cave
USFWS photo

The gating project was partially funded by the FWS Chesapeake Bay/Susquehanna River Ecosystem program. Our West Virginia Field Office contracted with Roy Powers of the American Cave Conservation Association to design and direct the construction. Other FWS personnel key to completion of the project came from the Ohio River Islands NWR, FWS Pennsylvania Field Office, and Patuxent NWR. Participants in the project also included The Nature Conservancy, U.S. Forest Service, and National Speleological Society chapters (or Grottoes) from Ohio, Virginia, West Virginia, and Maryland. Forty-six people participated in the effort.

Reported by William A. Tolin, Endangered Species Specialist in the FWS West Virginia Field Office in Elkins.

ON THE WEB

The Fish and Wildlife Service's Endangered Species Homepage provides a wealth of information on our Endangered Species Program:

Listing Web Page
http://endangered.fws.gov/listing
View or download recent listing notices or actions published in the *Federal Register*; find out which animals and plants are protected by viewing species lists; visit the frequently asked questions to learn more about the listing process, petition management, listing candidates, "candidate conservation agreements with assurances" for private property owners, and critical habitat designations.

Habitat Conservation Planning Web Page
http://endangered.fws.gov/hcp
Go to this website for details on the habitat conservation planning process, download the HCP Handbook, and view a list of HCPs and the species they address.

Recovery Web Page
http://endangered.fws.gov/recovery
An overview of the recovery program and reclassification and delisting activities and more is provided on the recovery program's web page. Recovery plans approved during 1994-1998 are available online at http://endangered.fws.gov/recovery/recplans/.

Law Enforcement
http://www.le.fws.gov/
Learn about our nation's wildlife laws and take a virtual tour of the National Fish and Wildlife Forensics Laboratory. Information on wildlife permits is also available.

Listing Actions
http://endangered.fws.gov/frpubs/00fedreg.htm
View or download new listing actions, policies, and other announcements as published in the *Federal Register.*

Prepared by Julia Bumbaca of the FWS Division of Endangered Species, Branch of Information Management, at the Service's Arlington, Virginia, headquarters office.

During August and September 1999, the Fish and Wildlife Service and National Marine Fisheries Service (NMFS) published the following Endangered Species Act (ESA) listing actions in the *Federal Register*. The full text of each proposed and final rule can be accessed through our website: http://endangered.fws.gov.

Proposed Rules

Aleutian Canada Goose *(Branta canadensis leucopareia)* This unique subspecies nests only on a few of Alaska's remote Aleutian Islands and winters in areas of California and Oregon. It was originally listed as endangered after an introduced predator, the arctic fox, almost eliminated the geese from their nesting grounds. By the mid-1970's, the Aleutian Canada goose population numbered only in the hundreds.

Aleutian Canada goose
Photo by Glen Smart/USFWS

For the past several decades, biologists have worked intensively to remove the non-native foxes, reintroduce geese back onto the fox-free islands, research migration routes, and protect wintering habitat. Today, we estimate that the Aleutian Canada goose numbers more than 32,000 birds and is no longer in danger of extinction. On August 3, we proposed to recognize the bird's recovery by removing it from the list of threatened and endangered species. (See "A Spectacular Summer for Birds" in *Bulletin* Vol. XXIV, No. 4.)

Golden Sedge *(Carex lutea)* A perennial in the family Cyperaceae, the golden sedge has yellowish green, grass-like leaves and produces stems that may reach 3 feet (0.9 meter) or more with many flowers. This plant is native to the coastal plain of North Carolina, where it is associated with wet pine savannas on sites underlain with calcareous (chalky) deposits. Historically, its open habitat was maintained by periodic wildfires.

The golden sedge currently is known only from eight populations in Pender and Onslow counties. Most of the populations are small, and seven are on privately owned lands vulnerable to draining, development, mining, fire suppression, and a variety of other changes in habitat management. On August 16, we proposed to list this rare plant as endangered. We are also working with the State of North Carolina (which already considers the plant endangered), The Nature Conservancy, and landowners on cooperative protection and management plans.

Scaleshell Mussel *(Leptodea leptodon)* A freshwater mollusk, the scaleshell mussel has a thin, fragile shell that measures up to about 4 inches (10 centimeters) in width and is marked with faint green rays. It once inhabited 53 rivers or streams throughout most of the eastern United States, with populations found as far west as Oklahoma. Like many other native mussels, however, the scaleshell has declined drastically in range and numbers. Today, populations of this species are known in only 13 rivers in Missouri, Arkansas, and Oklahoma, and we believe 10 of these populations are continuing to decline. Accordingly, on August 13, we proposed to list the scaleshell mussel as endangered.

Threats to the scaleshell, as with many other mussels species, include degraded water quality due to pollution and sedimentation; alteration of habitat through the damming, dredging, or channelizing of waterways; and competition with non-native species like the zebra mussel *(Dreissena polymorpha)*. Because the range of the scaleshell overlaps those of several other endangered or threatened mussel species, we do not expect that a decision to list the scaleshell would have any significant additional impacts on river use.

Scaleshell mussel
USFWS photo

Critical Habitat On August 3, we proposed to designate Critical Habitat in parts of Orange and San Diego counties, California, for the tidewater goby *(Eucyclogobius newberryi)*, a small endangered fish. Such a designation requires Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to adversely modify the Critical Habitat. Descriptions and maps of the proposed Critical Habitat areas were published as part of the proposal.

Final Rules

Ten Hawaiian Plants The following plant taxa native to the Maui Nui group of Hawaiian islands (Maui, Moloka'i, Lana'i, and Kaho'olawe) were listed on September 3 as endangered:

- *Clermontia samuelii* or (in Hawaiian) 'oha wai, a shrub in the bellflower family (Campanulaceae);
- *Cyanea copelandii* ssp. *haleakalaensis* or haha, a vine-like shrub in the bellflower family;
- *Cyanea glabra* or haha, a branched shrub;
- *Cyanea hamatiflora* ssp. *hamatiflora* or haha, a palm-like tree;
- *Dubautia plantaginea* ssp. *humilis*, or na'ena'e, a dwarfed shrub in the sunflower family (Asteraceae);
- *Hedyotis schlechtendahliana* var. *remyi* or kopa, a subshrub in the coffee family (Rubiaceae);
- *Kanaloa kahoolawensis*, a densely branched shrub in the legume family (Fabaceae);
- *Labordia tinifolia* var. *lanaiensis* or kamakahala, an erect shrub or small tree in the logan family (Loganaceae);
- *Labordia triflora* or kamakahala, a climbing plant; and
- *Melicope munroi* or alani, a sprawling shrub in the citrus family (Rutaceae).

Cyanea copelandii *ssp.* haleakalaensis
Illustration by Yevonn Wilson-Ramsey, reprinted from Manual of the Flowering Plants of Hawai'i *©, courtesy of the University of Hawaii Press*

The 10 plants and their habitats have declined drastically as a result of competition from non-native plants and/or predation or habitat degradation by non-native animals (primarily goats, pigs, and deer). Such chance events as fires and hurricanes, which may not have jeopardized the survival of these species before they reached the brink of extinction, have become additional threats. For example, one species, *K. kahoolawensis*, now exists as only two known individuals.

A recovery plan will be developed for all 10 species. Under State contract, the National Tropical Botanical Garden on the island of Kaua'i has collected seeds of *K. kahoolawensis* and is propagating plants. The habitats of some of the species, particularly those occurring on Federal and State lands, already have been fenced for protection from pigs and goats.

Salmon On August 2, we listed nine "Evolutionary Significant Units" or ESUs of chinook salmon *(Oncorhynchus tshawytscha)*, chum salmon *(Oncorhynchus keta)*, sockeye salmon *(Oncorhynchus nerka)*, and steelhead *(Oncorhynchus mykiss)* in Washington and Oregon as (depending on their location) endangered or threatened. This listing action was based on status determinations by the NMFS, which has primary ESA jurisdiction for most marine species.

On September 16, we listed two ESUs of chinook salmon in California as threatened, again based on NMFS findings. Like the other Pacific salmon taxa already listed under the ESA, they have been reduced greatly by widespread habitat modification and other factors.

Chinook salmon
USFWS photo

Lake Erie Water Snake *(Nerodia sipedon insularum)* Populations of this non-venomous snake found among the western Lake Erie islands and adjacent waters in Ohio and Canada were listed on August 30 as threatened. The Lake Erie water snake is distinguished from the related northern water snake *(N. s. sipedon)* by differences in habitat, behavior, and morphology. Lake Erie water snakes use habitat composed of shorelines that are rocky or contain limestone/dolomite shelves and ledges for sunning and shelter.

Lake Erie water snake
Photo by Dr. Richard King/Northern Illinois University, De Kalb

Loss of this habitat, along with persecution by people who dislike or fear snakes generally, are the main reasons for its decline.

When approached by people, Lake Erie water snakes usually flee into the water or take cover. Certain activities, such as brief handling of the snakes to disentangle them from fishing gear or to transfer them from yards and roads into adjacent natural habitats, would not violate the ESA. (See the August 30 *Federal Register* for details.)

Corel Corp. photo

American Peregrine Falcon *(Falco peregrinus anatum)* On August 25, we celebrated the recovery of the American peregrine falcon by removing it from the list of threatened and endangered species. The primary cause for its decline was contamination by the pesticide DDT, which interfered with the peregrine's reproduction. The 1972 Environmental Protection Agency ban on DDT made falcon recovery possible. However, ESA protection and partnerships with State agencies, universities, and organizations like The Peregrine Fund accelerated the pace of recovery through captive breeding, the release of over 6,000 peregrines into the wild, and preservation of nest sites. Similar efforts took place in Canada, where the Canadian Wildlife Service and provincial agencies took the lead in a major captive breeding and reintroduction program. Currently, at least 1,650 pairs of peregrine falcons fly the skies of the U.S. and Canada. The species will continue to receive protection under the Migratory Bird Treaty Act.

BOX SCORE

Listings and Recovery Plans as of December 31, 1999

GROUP	ENDANGERED U.S.	ENDANGERED FOREIGN	THREATENED U.S.	THREATENED FOREIGN	TOTAL LISTINGS	U.S. SPECIES W/ PLANS**
MAMMALS	61	248	8	16	333	49
BIRDS	74	178	15	6	273	77
REPTILES	14	65	22	14	115	30
AMPHIBIANS	9	8	8	1	26	12
FISHES	69	11	44	0	124	91
SNAILS	18	1	10	0	29	20
CLAMS	61	2	8	0	71	45
CRUSTACEANS	17	0	3	0	20	12
INSECTS	28	4	9	0	41	27
ARACHNIDS	5	0	0	0	5	5
ANIMAL SUBTOTAL	356	517	127	37	1,037	368
FLOWERING PLANTS	553	1	137	0	691	534
CONIFERS	2	0	1	2	5	2
FERNS AND OTHERS	26	0	2	0	28	28
PLANT SUBTOTAL	581	1	140	2	724	564
GRAND TOTAL	937	518	267	39	1,761*	932

TOTAL U.S. ENDANGERED: 937 (356 animals, 581 plants)
TOTAL U.S. THREATENED: 267 (127 animals, 140 plants)
TOTAL U.S. LISTED: 1,204 (483 animals***, 721 plants)

*Separate populations of a species listed both as Endangered and Threatened are tallied once, for the endangered population only. Those species are the argali, chimpanzee, leopard, Stellar sea lion, gray wolf, piping plover, roseate tern, green sea turtle, saltwater crocodile, and olive ridley sea turtle. For the purposes of the Endangered Species Act, the term "species" can mean a species, subspecies, or distinct vertebrate population. Several entries also represent entire genera or even families.

**There are 530 approved recovery plans. Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. Recovery plans are drawn up only for listed species that occur in the United States.

***Nine animal species have dual status in the U.S.

ENDANGERED Species BULLETIN

U.S. Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240